

THE DEPARTMENT OF ENERGY
Office of Public Affairs

News Media Contact:
(202) 586-4940

For Immediate Release:
Monday, July 12, 2010

Department of Energy Awards \$92 Million for Groundbreaking Energy Research Projects

New ARPA-E projects in 18 states will accelerate innovation in clean energy technologies, increase America's competitiveness and create jobs

Washington, D.C. – U.S. Secretary of Energy Steven Chu today announced 43 cutting-edge research projects that aim to dramatically improve how the U.S. uses and produces energy. Funded with \$92 million from the American Recovery and Reinvestment Act through the Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E), today's selections focus on accelerating innovation in green technology while increasing America's competitiveness in grid scale energy storage, power electronics and building efficiency.

"These innovative ideas will play a critical role in our energy security and economic growth," said Secretary Chu. "It is now more important than ever to invest in a new, clean energy economy."

The projects announced today are based in 18 states, with 36% of projects led by universities, 33% by small businesses, 24% by large businesses, 5% by national labs, and 2% by non-profits. These awards complete ARPA-E's grants under its Recovery Act funding: in three rounds of awards since last year, the agency has selected a total of 117 projects for \$349 million in funding, supporting research that can deliver breakthrough changes in how the U.S. generates, stores, and utilizes energy.

The topic areas for projects announced today include:

1. Grid-Scale Rampable Intermittent Dispatchable Storage (GRIDS) --- Affordable, large-scale energy storage could change the game for the U.S. electrical grid. In particular, energy storage will be needed to enable the widespread use of two key renewable energy sources: wind and solar power. This program seeks to develop revolutionary new storage technologies that exhibit energy, cost, and cycle life comparable to pumped hydropower, but which are modular and can be widely implemented at any location across the power grid. Ultimately, technologies developed through this program will be scalable to the gigawatt and gigawatt-hour levels of power and energy capacity. This technology development program complements other Department of Energy electrical energy storage efforts by focusing on early stage

prototyping and proof-of-concept R&D efforts. One of the GRIDS projects being funded is:

General Atomics (San Diego, CA) - Soluble Acid Lead Flow Battery

General Atomics and the University of California San Diego will develop a novel flow battery technology that pumps chemicals through the battery cell when electricity is needed. The proposed flow battery revolutionizes a century-old lead-acid battery technology to achieve low cost, high efficiency and reliability needed for use on the electric power grid. This high-risk technology development program will use novel materials that greatly increase power while resisting the corrosion that limits the cycle life of conventional lead acid batteries. The goal of these innovations is a battery that can be scaled for grid-scale energy storage but which costs less and performs far longer than today's technologies. This project will receive \$2 million in funding.

2. Agile Delivery of Electrical Power Technology (ADEPT) --- A large portion of the electricity we generate is lost before we can use it. ADEPT is focused on dramatically improving the efficiency and cost of power conversion and switching, among the main causes of electrical efficiency loss across the electrical grid and in electrical applications from cars to computers. The ADEPT projects explore integrated circuits that incorporate high-voltage transistors and high-performance magnetic materials in applications such as: drivers for LED lighting that are 300 times smaller, power supplies for computers that are 10 times smaller, and light-weight chargers for electric vehicles. These advanced components will enable miniaturization, increased efficiency and reduced cost. ADEPT is also focused on creating record-breaking, high-voltage transistors that can allow the electricity grid to be used like a large controllable, circuit. One of the ADEPT projects being funded is:

Cree Inc. (Durham, NC) - Silicon Carbide Power Modules for Grid Scale Power Conversion

This project will develop advanced transistors for electrical substations that can make the electrical grid more flexible and controllable. Using silicon carbide material, these transistors will achieve record high voltage (15-20kV). With these advanced transistors, electrical substations could replace today's massive (8000 lb) distribution transformers with much smaller, suitcase-sized electronic transformers (100 lbs). This project will receive \$3.7 million in funding.

3. Building Energy Efficiency Through Innovative Thermodevices (BEET-IT) ---

Buildings consume 40% of the primary energy in the United States and account for approximately 40% of our CO₂ emissions. Cooling is one of the major uses of energy in buildings, yet the basic approaches used for cooling have not changed in decades. New, more efficient methods of cooling represent a great opportunity to reduce energy consumption and greenhouse gas (GHG) emissions from buildings. In addition, the

refrigerants currently used in cooling are a potent source of GHG emissions, as much as 1,000 times as powerful as carbon dioxide. The BEET-IT program is focused on developing new approaches and technologies for cooling in buildings to dramatically improve energy efficiency and reduce the use of refrigerants and their impact on climate change. One of the BEET-IT projects being funded is:

Battelle Memorial Institute (Columbus, OH) - Absorption-Osmosis Cooling Cycle

This project will develop a new air-conditioning system using water as a refrigerant - instead of typical chemicals that are potent greenhouse gases - and using salt as the heat absorber. The system uses reverse osmosis to efficiently separate water from the salt solution. This approach is radically different from traditional cooling technologies that use mechanical compressors, and it has the potential to increase the energy efficiency of air conditioning by more than 50%. This project will receive \$400,000 in funding.

View the [project selections](#) announced today.

View [technical descriptions](#) for the projects announced today.

ARPA-E received 529 initial concept papers and encouraged approximately 164 applicants to submit full applications. Multiple review panels composed of leading U.S. science and technology experts reviewed each proposal and made recommendations based on scientific and technical merit and the potential to dramatically advance national energy and economic goals. Potential additional applications for funding innovative research projects are pending further review.

To learn more about ARPA-E and previous awards, visit arpa-e.energy.gov.

###